

CLAIMS:

1. A variable mirror (100;200;300;400;500;600;740;922) comprising:
 - a fluid chamber (130;230);
 - an optical axis (90) extending through at least a portion of the fluid chamber;
 - a first polar and/or conductive fluid (110;210) and a second fluid (120;220) in
 - 5 contact over an interface (140,140';240,240';340,340';440,440';540,540') extending transverse the optical axis, the fluids being substantially immiscible;
 - an interface adjuster (250;250';250'') arranged to alter the configuration of the interface via the electrowetting effect; and
 - wherein the interface comprises a reflective material.
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2. A mirror as claimed in claim 1, wherein the reflective material comprises a metal.
3. A mirror as claimed in claim 1 or claim 2, wherein the reflective material
 - 15 comprises a Metal Liquid – Like Film.
4. A mirror as claimed in any one of the above claims, wherein the reflective material comprises a thin metal layer on an organic polymer film.
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5. A mirror as claimed in any one of the above claims, wherein the interface adjuster (250;250';250'') comprises:
 - a first electrowetting electrode (252) in electrical contact with the first fluid (110;210);
 - at least one second electrowetting electrode (254,254a,254b; 255a,255b,255c,
 - 25 255d, 255e) located adjacent the interface (140,140';240,240';340,340';440,440';540,540'); and
 - a voltage source (256;256';256a;256b) for applying a voltage between said first and second electrodes for altering the configuration of said interface.

6. A mirror as claimed in claim 5, wherein an edge of said interface (140,140';240,240';340,340';440,440') is constrained by the fluid chamber (130;230), and the second electrowetting electrode (254,254a,254b) is arranged to act on at least a portion of the interface edge.

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7. A mirror as claimed in claim 5, wherein the second electrode (255a, 255b, 255c, 255d, 255e) is separated from the interface (540,540') by at least a portion of said second fluid (220).

10 8. An optical device (700;800;900) comprising a variable mirror as claimed in claim 1.

9. An optical device as claimed in claim 8, wherein the optical device comprises a laser cavity (800) including said variable mirror, the cavity further including a second
15 mirror.

10. An optical device as claimed in claim 8, wherein said optical device comprises a Maksutov Cassegrain catadioptric system (700) comprising a primary mirror (740) and a secondary mirror (701), the primary mirror being formed by said variable mirror.

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11. An optical device as claimed in claim 8, wherein the optical device comprises an optical scanning device (900) for scanning an optical record carrier.

12. A method of manufacturing a variable mirror (100;200;300;
25 400;500;600;740;922), the method comprising the steps of:

- providing a fluid chamber (130;230), with an optical axis (90) extending through at least a portion of the fluid chamber;
- providing a first polar and/or conductive fluid (110;210) and a second fluid (120;220) in contact over an interface (140,140';240,240';340,340'; 440,440';540,540')
30 extending transverse of the optical axis, the fluids being substantially immiscible, and the interface comprising a reflective material; and
- providing an interface adjuster (250;250';250'') arranged to alter the configuration of the interface via the electrowetting effect.

13. A method of operating an optical device (700;800;900), the optical device comprising a variable mirror as claimed in claim 1, the method comprising controllably altering the configuration of the interface (140,140';240, 240';340,340';440,440'; 540,540') so that the mirror provides the desired reflective properties.